



a PART of the story

Gear motors

by Jim Coffee • San Diego, California, USA • Images by the author

The technology: Gear motors

The purpose: Powering automata with electric motors



1. Pictured are AC gear motors that can be used to power automata. I prefer the seven-watt motor on the right.

I have designed and constructed 20+ automata thus far and I recently realized that 15 of them were powered by electric motors. Why? While I do enjoy the relationship with an automaton when I am cranking it, I seem to enjoy it more by standing back and watching it move. I also enjoy automata that sense the presence of people and turn themselves on.

Gear motors can easily be used to power automata. They have outputs ranging from one-half to 300 rpm and come ready to plug into the wall or to be controlled by a microprocessor.

When I need a motor that will be plugged into the wall I use synchronous AC gear motors. I have used these motors with power ratings of 3.5, 7, and 14 watts. Depending on how you wire them, they can operate in either clockwise (CW) or counterclockwise (CCW) directions. These quiet and reliable motors can be sourced for approximately \$15US and should last the lifetime of the automaton. Of the three AC gear motors in **photo 1**, the one I work with most is the seven-watt motor (on the right). Common sense should be used when wiring these motors. I always include an on-off switch and a three-amp circuit breaker.

If I am going to control the motor with a microprocessor, I choose a 5v DC gear motor. **Photo 2** shows two micro gear motors (a three-pack is approximately \$12US) and one larger gear motor. I use both in my automata, with the larger (approximately \$15US) being used



2. DC gear motors can also be used to power automata. My favorite is the large one. Note that gear motors can have shafts in different orientations.

most often. It is approximately seven watts. Depending on how they are wired, they will rotate either CW or CCW. These motors contain brushes and are a bit noisier than the AC motors.

To interface the motor with the automaton, a shaft adapter or coupler is used. These are readily available to purchase, though I frequently 3D print my adapters/couplers and the motor mounts themselves.

I purchase most of my motors via Amazon and suggest to you <https://ChancsMotor.com/> as an excellent resource for both information and motors. 